

Post hysterectomy vault prolapse: A growing challenge for the gynaecologist

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Keywords: Sacrospinous fixation, sacrocolpopexy

Conflict of interest: None. **Disclaimer:** Nil.

As the modern medical science is advancing with increase in life expectancy and the gynaecological laparoscopic surgeries are becoming more popular, the number of vaginal vault prolapse following hysterectomy is also increasing. Vaginal vault prolapse affects the woman's quality of life by imparting negative effects associated with urinary, anorectal and sexual dysfunction.

According to International Continence Society vault prolapse is defined as descent of the vaginal cuff below a point that is 2cm less than the total vaginal length above the plane of hymen [1].

Magnitude of problem

Post hysterectomy prolapse occurs in 1 % cases after 3 yrs follow up and 15 % cases after 15 years follow up as shown in different studies. Risk further rises 5.5 times if there is pre existing descend of pelvic floor or genital organs. Pelvic organ prolapse repairs in more than 65 years old ladies leads to 30 % - 50% surgeries while in more than 80 years old only in 11%. There is an overall increase in postoperative vaginal vault prolapse from 0.2% to 43%. There is doubling in the incidence of prolapse with each decade of life- so also the chance of vault prolapse [2-7].

Principles of management

Randomised controlled studies addressing post hysterectomy vaginal vault prolapse are limited and most are based on case series.

Royal College of Obstetrics and Gynaecology (RCOG) and British Society of Urogynaecology have developed a guideline for its management-

“Green Top guidelines no. 46” published in October 2007, provides guidelines on the management of post hysterectomy vaginal vault prolapse. Management has to be individualised.

A proper understanding of the pelvic anatomy and pathogenesis of vault prolapse is of paramount importance in its successful repair.

In making the choice of the right procedure the following factors are important:

1. Surgeon experience
2. Age of the patient
3. Co-morbidities
4. Previous surgeries
5. Sexual life of the patient

Prevention of vault prolapse

For preventing vault prolapse following hysterectomy operation two most important points to be considered are as follows:

1. Attaching uterosacral ligament and the cardinal ligament to the vaginal membrane
2. Closure of the cul-de-sac

Some of the commonly practised procedures are mentioned below:

1. Attachment of uterosacral ligament and the cardinal ligament to the vaginal membrane: Crickshank S H used it routinely during hysterectomy. He preferred to complete the suture in the initial steps of vaginal hysterectomy lest he may miss it in subsequent steps [8].
2. Modified McCall culdoplasty: This procedure is also employed in abdominal hysterectomy. Initially the uterus is to be pulled up to make the uterosacral

ligament taut and then permanent tag sutures are employed on each uterosacral ligament at a point 2 cm distal to pelvic wall. These are subsequently fixed to the vaginal vault [9].

3. Fixation of the uterosacral ligament: After the uterus is separated and delivered at the time of closure of the vaginal vault the uterosacral ligament are sutured to the vaginal vault by separate sutures. Or the uterosacral ligaments are included in the continuous locked sutures, closing the vault- is another option. This is the common practise in our region.
4. Fixation of uterosacral-mackendrot complex to the vaginal vault during vaginal hysterectomy: this is also a common procedure in our region. In this process the suture end (which is kept long) of uterosacral – mackendrot stump is fixed to the vaginal vault at the conclusion of the hysterectomy.
5. Peritoneal closure: It is important as a part of vaginal hysterectomy to prevent enterocele subsequently. For this bites are taken at 12 o'clock position and then continuing clockwise or anticlockwise (as per convenience of the surgeon). Subsequent bites are taken on stumps proximal to the suture and the anterior rectal serosa 3-4 cm above the peritoneal reflection. The suture is sewn to the vagina at the level of the cardinal ligament when the vaginal cuff is closed.
6. McCall culdoplasty: During vaginal hysterectomy this procedure is found to be most effective and satisfactory in preventing enterocele and vault prolapse. In this procedure suture is passed through the uterosacral ligaments, peritoneum of the cul-de-sac, 3-4 cm away from the peritoneal margin at 6 o'clock position and sewn to the vaginal margin. The threads are kept long and tied at the end of the procedure.

Other variants of McCall culdoplasty:

- (a) Internal McCall when the uterosacral ligaments are united in the mid line.

- (b) External McCall- when uterosacral ligaments are fixed to the vaginal vault separately on each side.

7. Halban cul-de-sac closure: It is vertical closure of peritoneum in closure of cul-de-sac. This was first used for abdominal hysterectomy. It is useful in avoiding ureteric injury and closing deep cul-de-sac. Incorporation of uterosacral ligament on the suture add further strength to the closure [10].
8. Transvaginal double purse string suture: In case of vaginal hysterectomy to obliterate a deep cul-de-sac after applying 1 purse string suture as usual for closure of peritoneal cavity, second purse string suture is applied 1 cm distal to the first one [11].
9. Moschcowitz suture: This is mostly used during abdominal hysterectomy to obliterate a deep cul-de-sac by circumferential suture. Risk to the ureters on the side wall of the pelvis is of great concern in the procedure [12].
10. Adjunct support to the vaginal cuff: For every patient undergoing hysterectomy, both preoperative and intraoperative assessment of pelvic support is mandatory.

All the defects detected during the evaluation must be corrected.

In some of the high risk cases, extra support may be imparted by fixing the vault viz

- (a) In case of vaginal hysterectomy with sacrospinal fixation and
- (b) During abdominal hysterectomy by sacrocolpopexy.

Treatment of vaginal vault prolapse

In literature more than 40 procedures have been described for repair of vaginal vault prolapse. The procedures may be divided into broad groups as follows:

1. Colpocleisis is only done in selected old frail ladies.
2. Fixation of vault to the pelvic fixed points, eg; sacrocolpopexy.
3. Ventral fixation to anterior abdominal wall- not commonly used at present.

Out of all the procedures, the following few are commonly used and are giving best results

1. Abdominal sacrocolpopexy
2. Sacrospinous fixation
3. High modified McCall culdoplasty

Any associated defects of the adjoining structures (eg cystocele, enterocele, rectocele, etc.) are to be attended in the same sitting to avoid embarrassing recurrences in a later date.

Repair of vault prolapse may be done by different approaches viz

- (a) Abdominally - eg sacrocolpopexy
- (b) Vaginally – eg sacrospinous fixation or McCall culdoplasty
- (c) Laproscopic procedure – eg sacrocolpopexy
- (d) Robotic assisted sacrocolpopexy

Laproscopic procedure needs technical skills and equipment and is costly. It gives similar result to the open methods.

Sacrocolpopexy - In this procedure a tape is required to pull the vaginal vault and fix it to the sacrum. It may be a synthetic one, eg. Proline mesh (polypropylene), or patient's own tissue, eg. fascia lata.

Graft attachment to the vaginal vault is same for both open and minimally invasive procedure. In laparoscopy extracorporeal knots are commonly used. Whereas robotic assisted laparoscopy uses intracorporeal knot tying. Laproscopic graft fixation to the anterior longitudinal ligament with permanent suture is usually recommended. Of course, many surgeons often use spiral staples. Comparison of both the techniques need further study. Cadaveric study showed that sutures had strong biomechanical resistance as compared to staples. Advantage of staples over the sutures is primarily the speed of surgery [13].

The peritoneum in front of the sacrum (below promontory) is incised, dissected carefully and the upper end of the mesh is fixed with 3-5 stitches at about 1 cm apart with the anterior longitudinal ligament by non-absorbable suture. The mesh is buried under the peritoneum.

Sacrospinous fixation is done when vaginal approach is preferred. Posterior vaginal wall is opened up – dissected – pararectal space entered – sacrospinous – coccygeal complex identified.

Under direct vision suture is passed – sewn to the vaginal margin – kept long and tied at last. This may distort the vagina and may be avoided in sexually active women.

Conclusion

Post hysterectomy vaginal vault prolapse is a preventable complication. For its prevention and also for its curative treatment the following points need utmost importance:

1. Fixation of vaginal vault to a strong pelvic structure
2. Obliteration and repair of cul-de-sac.
3. Properly selected suture material eg. polypropylene (proline) or delayed absorbable eg. PDS (polydioxamine)

Above all, proper understanding of pelvic anatomy and careful evaluation of pelvic support is paramount importance for proper management and prevention of vault prolapse.

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